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ELECTRIC LIGHT & POWER

EL&P

FEBRUARY 1992
Volume 70, Number 2
A PENNWELL PUBLICATION

VOICE OF THE ELECTRIC UTILITY INDUSTRY

El Paso utility files Chap.11, 2nd utility since Depression

EL PASO, TX—El Paso Electric Co. (EPE) will reorganize under Chapter 11 bankruptcy protection, only the second major utility since the Depression to do so. Both utilities fell under the weight of nuclear-plant construction programs.

Public Service Co. of New Hampshire, which filed in 1988, still hasn't completed all transactions linked to its reorganization. (See story, this issue.)

"Our goal," said EPE Chairman David H. Wiggs Jr. in a statement, "is to emerge from bankruptcy as quickly as possible with a new rate and capital structure that will enable the company to offer competitive rates to our customers and earn a fair utility return for our investors."

Another EPE company spokesperson said, "I believe we exercised all available avenues."

How a filing works

Chapter 11 allows a company to develop a plan voluntarily to put its finances in order without lawsuits from creditors. Under Chapter 11, a federal court approves management actions and a majority of creditors must agree to the reorganization. All debts are not always paid. A plan is due in 120 days, but extensions will probably be sought, given the complexity of finances.

The reorganization is not expected to affect service to 248,000 customers in the city and the Rio Grande Valley of West Texas and southern New Mexico.

The Jan. 8 filing, foretold as a possibility by company executives, followed several months of negotiations with creditors and regulators. The Texas Public Utility Commission refused to change parts of a previous ruling on EPE's cost recovery from the Palo Verde nuclear project that might have helped the utility avoid the filing. Regulators did make a change the day of the filing, EPE said, that saves potential write-offs of $50 million.

Reasons for the fall

The reason for EPE's fall was largely expenses linked to its 15.8-percent share of the three units of the 3810-MW Palo Verde nuclear project. Financial developments include the following:

- In November 1991, state regulators granted a $52.8-million increase, but only $35 million was available immediately. On unit 3, $32 million was disallowed. EPE said it needed at least $84 million out of $131.3 million sought for Palo Verde expenses.

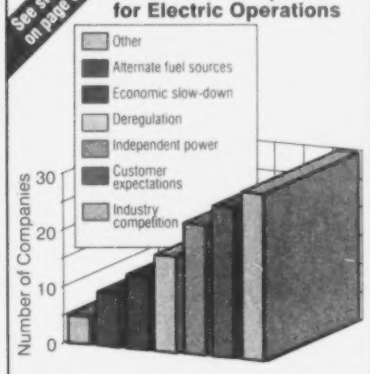
Regulators couldn't justify additional immediate hikes to help the utility pay its obligations, giving the utility a five-year phase-in plan to recover other costs. This was the fourth base-rate increase linked to Palo Verde, state regulators said in a release.

After the filing, the state commission took steps to try to retain jurisdiction over rates during reorganization, but said it would cooperate with the federal bankruptcy court.

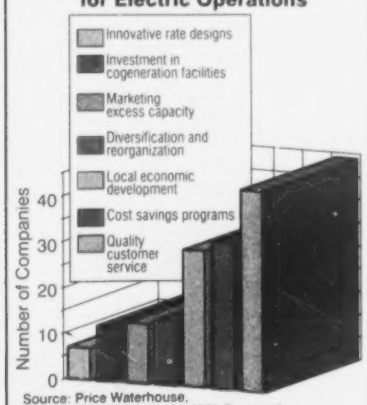
- EPE has $1.084 billion in debt. Including sale and leaseback payments, the amount is closer to $2 billion, according to the company. EPE had previously received several extensions on payments to try to settle its finances in negotiations since November of last year. About $400 million was due at year end.
- A $20-million payment for Palo Verde electricity was due Jan. 9, the day after the filing. The utility couldn't come up with money.
- Through nine months of 1991, EPE showed a loss of $26.7 million, 75 cents per share, on revenue of $329.3 million.
- On Jan. 6, El Paso's city council said it would try to reclaim $1.6 million from EPE, citing excessive rate increases.
- Credit ratings by Moody's Investor Service fell on $800 million of EPE securities after the filing.

See story on page 3

Sources of Competition for Electric Operations



Responses to Competition for Electric Operations



Source: Price Waterhouse, "The Public Utility Industry 1991 Survey of Financial Reporting and Industry Developments."

End CMS Energy's PUHCA exemption, Michigan tells SEC

DEARBORN, MI—The Michigan attorney general asked federal regulators to revoke CMS Energy's exemption to the Public Utility Holding Company Act of 1935 (PUHCA). CMS Energy denied all related claims.

"The Michigan Public Service Commission has found Holding Company Act abuses by CMS Energy and [subsidiary] Consumer Power Company," charged Michigan Attorney General Frank Kelley in a statement, including:

- "Misuse of ratepayer funds to benefit utility affiliates.

Continued on page 4

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LATE NEWS

Nova Scotia intends to sell 57 percent of its Nova Scotia Power Corp., in public shares, for $400-million Canadian dollars (U.S. $348 M), to reduce debt. The province told of plans to privatize the entire utility within five years.

Detroit Edison and **Southern California Edison** each will expand previous electric-vehicle infrastructure research in a 30-month deal to lease a fleet of 10 Ford Ecostar electric vans, starting in 1993. Eighty vans will be leased for research, said Ford, which expects sales by 1998.

Sacramento Municipal Utility District plans to develop cogeneration, Pacific Northwest options, advanced technology, renewable resources and demand-side management, and not repower the closed Rancho Seco nuclear plant with natural gas.

SO_2 allowance report: p.13

PG&E Energy Center helps teach efficiency

Visitors to Pacific Gas & Electric's new Pacific Energy Center learn that energy efficiency isn't always high technology. This display shows customers that wise landscaping can help lower air conditioning bills. **See story, p.2.**

Arc darkens Washington after 'unlikely sequence'

WASHINGTON—An arc in a substation tripped two 230-kV lines and eventually a power plant, causing a 2.5-hour outage in parts of downtown Washington, DC, on Jan. 6, said Potomac Electric Power Co. (PEPCo). Later plant start-up damaged a generating unit.

"We can supply power to all customers without the plant, or without one or both 230-kV lines, but when all three went down, we lost [the ability to supply] power," according to PEPCo spokesperson Steve Arabia.

It was a "very unlikely sequence of events," he said, adding that the company never had such a big outage in downtown—18,000 customers.

Something happened after switching

When the utility activated remote switching at a southeast Washington substation, "something happened" to cause the arc between a reactor on one 230-kV transmission line and an adjacent 230-kV line 13-ft away. A reactor controls voltage.

The system imbalance from both lines going out tripped the 480-MW, coal-fired Potomac River plant. There was also a small fire in a downtown underground vault, Arabia said. An investigation continues.

The incident started at 5:05 p.m. Power was restored starting at 7 p.m., when one of the 230-kV lines was brought up. Three of the Potomac River units were started by 9 p.m., but during startup of the fourth, about 4:30 the next morning, there was an explosion in the boiler. Damages were isolated at the 102-MW unit and no injuries occurred at that Alexandria, VA, plant, Arabia said. This caused no additional power outages.

Large customers lose power

Customers without power included the State Department, the Federal Reserve, several subway stations, and PEPCo headquarters. Power was also cut off to the White House, but emergency generators there almost immediately resupplied power. Inoperative traffic signals snarled traffic.

PEPCo serves Washington and some suburbs in Maryland.

Nuclear unit relicensing rule mandates hearing on wear, no new-plant upgrades

Mark T. Hoske, News Editor
Henry Stein, Power Production Editor

WASHINGTON—The new U.S. nuclear plant relicensing rule allows up to a 20-year license renewal for operating nuclear power plants. The NRC adopted the rule in mid-November, 1991, to give plants a chance to operate beyond their initial 40-year licenses.

The final Nuclear Regulatory Commission (NRC) rule requires a formal NRC review and public hearing on age-related wear, but avoids retrofit upgrades to new-plant standards.

Holding owners to the full standards required for newer plants might have been too costly for many plants to continue operation. Because plants are upgraded during their operating lives, it was unnecessary to include upgrades in the renewal application, said NRC.

The new rule, which took effect Jan. 13, will not require review of all details that form the basis for the present license. Such a review might have tied up the process, observers noted.

Altogether, "The new rule seems to be quite reasonable," said Ron Simard, of the Nuclear Management and Resource Council, a group that represents nuclear utility interests in Washington.

In addition, the hearing on age-related wear will be limited in focus and shouldn't be an opportunity for anti-nuclear activists to unfairly delay the process, Simard suggested.

Licenses of 47 nuclear plants are scheduled to expire in the years 2000 to 2014. The Department of Energy (DOE) has said that renewing the licenses of two-thirds of the 111 U.S. nuclear units will save $60-300 billion in construction costs required if the plants were replaced. Forty-eight entities hold licenses to operate U.S. nuclear plants.

Safety first

The new NRC regulation sets standards utilities have to meet when applying for the new license. NRC Chairman Ivan Selin noted the rule "requires... utilities to perform technical analyses to demonstrate that their licenses can be safely renewed."

The new rule:

- Addresses any additional safety-related concerns not covered in ongoing regulatory oversight.
- Adds, to the existing license, new commitments to monitor, manage, and correct age-related wear.
- Requires an application be submitted to the NRC 5-20 years prior to license expiration.

The DOE expected the first license renewal application to be submitted by Northern States Power Co. for its Monticello nuclear plant located near St. Cloud, MN, in January. The application is jointly supported by DOE and the nuclear industry, according to DOE.

Yankee Rowe was to have been the first to file for relicensing (in 1990), but questions about the strength of its reactor vessel caused Yankee Atomic Electric Co., the owner-operator, to postpone the filing (*EL&P*, 11/91, p.3).

Declared DOE Secretary James D. Watkins, "Nuclear plants can continue to operate safely beyond the 40-year license term, and DOE's program with the NRC is designed to prove and assure that."

Proposed training rule praises current system

WASHINGTON—The Nuclear Regulatory Commission's proposed rule on training recognizes the effectiveness of training programs now in place, rather than imposing prescriptive procedures.

The proposal, released Jan. 7, endorses and requires the systems approach to training used by the nuclear industry over the past 10 years and the military for the past 20, explained Ron Simard, director of industry relations for the Nuclear Management and Resources Council.

Builds on initiatives

In a statement, the NRC said, "the proposed rule would build upon current industry initiatives related to training and qualification."

In part, it would require analysis of job requirements, identification of learning objectives, and evaluation of employees and the training program. Programs would have to be in place 180 days after the final rule, according to the NRC.

Comments to the NRC on the proposed rule are due by March 9.

PG&E's Pacific Energy Center guides efficiency efforts

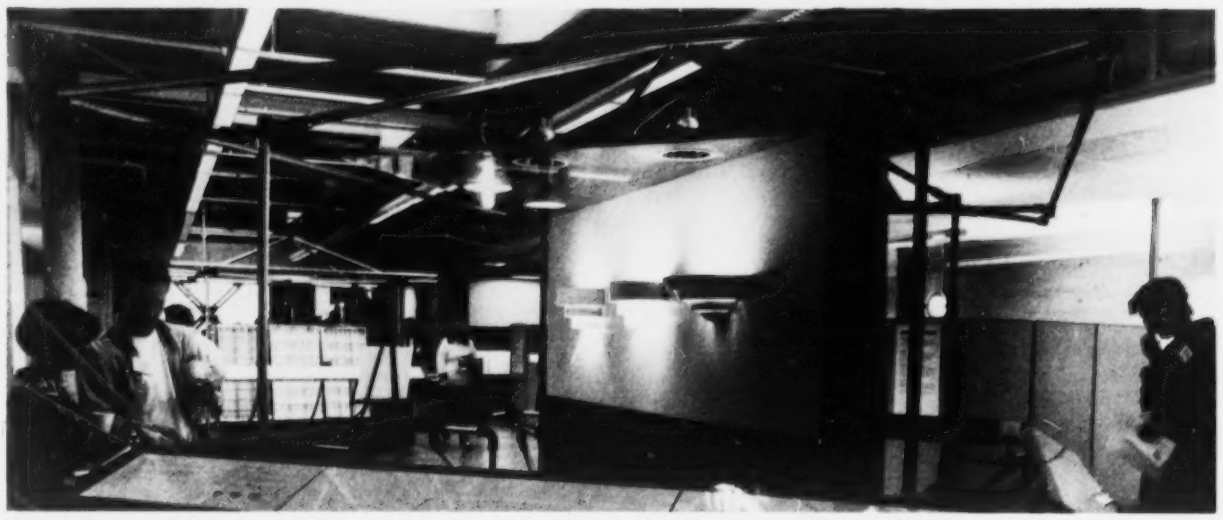
SAN FRANCISCO—PG&E's Pacific Energy Center, located downtown, provided significant power over the past two months, without any SO_2 or NOx emissions, without nuclear fuel and without hydro resources.

The $7.5-million, demand-side management "power plant" teaches customers how to use energy wisely. It's part of Pacific Gas & Electric Co.'s 10-year, $2-billion customer energy efficiency program aimed at reducing growth in electric demand by 75 percent or 2500 MW.

Although the company's 1991 efficiency efforts saved enough electricity to power 66,000 homes and natural gas to supply 49,000 homes, "This center is certain to help achieve greater savings for years to come," said Richard A. Clarke, PG&E chairman and chief executive officer.

During the first month since the center's Dec. 5 opening (*EL&P*, 1/92, p.1), more than 3000 people stopped in to learn from state-of-the-art energy equipment, appliances and designs.

Paul Ward, PG&E spokesperson, said more than 1000 people visited the center in the first two days of operation. PG&E has 16 energy experts there to help architects, engineers, builders, designers, developers, and others plan for the use of energy-efficient technologies in homes, commercial buildings and factories.



PG&E customers examine energy efficient lighting options on display at the Pacific Energy Center's lighting lab. Skylights offer "free" natural lighting.

Clarke said, "The success of this center will be measured by the energy our customers save and the lower energy costs that result. Its success will also be measured by the amount of pollution prevented as a result of reduced energy use." In addition, California regulators now allow utilities to benefit financially from efficiency efforts, such as including the cost of the center and its operation through 1993 in rates.

The 25,000 ft^2 center includes:

- Challenge 200 House and Power Play, which are hands-on experiments with new lighting, water heating, washing, drying, cooking and insulating technologies and an interactive computer to answer customer energy-use questions.
- A lighting lab to help professional designers work with and learn more than 100 technologies in efficient lighting.
- Professional design laboratories allow demonstration experiments and construction of design models to implement super-efficient indoor and outdoor lighting, heating, air conditioning, residential and commercial energy systems and efficient use of natural lighting and heating.
- Classrooms, an ergonomics and video display terminal demonstration and resource center for worldwide computer access to information.

The center is open 38 hours a week, Tuesday through Saturday, including Thursday until 8 p.m.

Did you hear....

"When the Senate voted...not to debate S.1220, the comprehensive national energy strategy bill before it, the lessons offered from the conflict in the Persian Gulf were ignored. Control of energy resources equates to power—military power AND economic power—and to ensure a stable economy and the nation's security, the United States must reduce its dependence on energy sources outside of its own control.

"This simple scenario is why AGA is urging Congress to resume consideration of a national energy policy bill...."

—Michael Baly III
President
American Gas Association

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Illinois Power: competitive markets

Utility computer-aided economic development increases load

DECATUR, IL—Illinois Power Co. runs the most aggressive economic development program in the state, according to the utility. During 1991, eight companies recruited by Illinois Power have announced plans to invest more than $87.3 million in downstate locations.

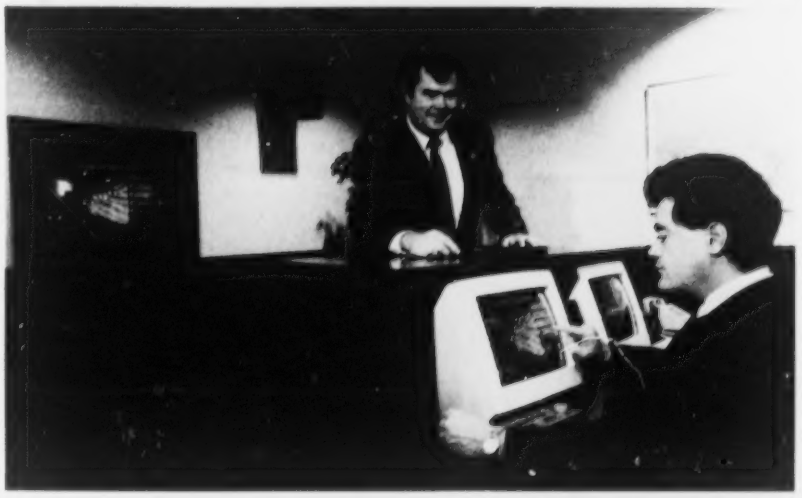
Like other utilities, Illinois Power (IP) uses economic development to attract new business, expand current businesses and increase electrical load.

IP, an investor-owned electric and gas utility, serves one-quarter of Illinois and has about 561,000 electric customers. About half of electric revenue is industrial. The utility expects its economic development program to contribute to a predicted 3-percent annual growth in weather-normalized kilowatthour sales during 1991-1995.

The utility's economic development program has 19 full-time professionals focusing on attracting domestic and international business investments to northern, central and southwestern Illinois. This team uses IP's newly developed Center for Site Selection's advanced electronic technology to provide free customized presentations and other services to prospects, real estate agents and consultants.

> **"Cutting-edge laser and computer technology allow clients to touch a video screen and be transported to communities throughout Illinois."**
>
> ***—Robert Treat, Illinois Power Co.***

"Realtors can call with a prospect's site requirements and within five minutes have a sheet listing available locations meeting those requirements sent via facsimile," said IP's public information contact, Frank Beaman.



Illinois Power's interactive video computer system helps businesses quickly choose a site to fit its specifications. Such systems, and related programs, increase utility competition for load growth

Robert Treat, supervisor of business development, explained further: "Within 24 hours, the Center for Site Selection can have videos of the site, buildings and community in their mailbox. Cutting-edge laser and computer technology allow clients to touch a video screen and be transported to communities throughout Illinois."

Treat explained that hundreds of buildings and sites—listed by industrial and commercial real estate agents across the state—can be toured during a few hours in the center's Decatur offices.

IP's system, shown at several industry meetings, touts an advanced electronic system that simulates a building's specifications, places it in the prospective location, landscapes it, paints a company name on the sign and prints a color image for the client to take immediately.

Video overviews of each community include:

- Summaries of wages
- Tax rates
- Labor skills
- Environmental considerations
- Utility access
- Government incentives
- Transportation availability
- Land costs

IP offers the information in five languages—German, English, Japanese, Korean and French.

George Levi, IP's director of economic development, said the center's portable interactive video system runs about $25,000. He said a number of other utilities have similar systems including Georgia Power Co., Alabama Power Co. and Oklahoma Power & Light.

Levi offers a satisfaction guarantee to prosective new customers: "If we don't have a location that works for you, we'll tell you which of our competitors might."

In 1991, the Center for Site Selection had more than 700 visitors. Customized videotapes, assembled and edited at the center, have been sent out in response to more than 100 individual requests, Levi said.

Economic development efforts go beyond high-tech equipment. The utility has interconnected networks with city, regional and state economic development agencies and services, Treat explained. Quarterly breakfasts in Chicago and St. Louis sponsored by IP allow industrial realtors to share information and develop relationships, he added.

The IP staff regularly attends regional and national meetings of the National Association of Corporate Real Estate Executives and of the Industrial Development Research Council.

Also, IP actively recruits businesses using direct mail, advertisements, trade shows and a targeted call program, Treat said. Much of the information and the techniques for gathering it are shared with newcomers to the economic development business.

People at IP noted that prompt follow-up is integral to the program's success. Every person who shows interest receives a letter or phone call within 48 hours.

Illinois Power also markets to the international banks, trading companies and businesses and seeks direct investments. Dossiers on about 30 customers interested in joint ventures, export opportunities, and sales or licensing agreements are presented at trade shows and during overseas investment trips.

Convenient location is among IP's selling points, Treat points out, because Decatur is located 179 miles from Chicago, 153 from Indianapolis, and 130 from St. Louis.

Competition, environment, flexibility are top concerns

CLEVELAND—Proactive competitive moves, flexibility in power purchases and more careful treatment of the environment are three top utility challenges, according to Price Waterhouse's "The Public Utility Industry, 1991 Survey of Financial Reporting and Industry Developments."

Other majors issues listed were industry consolidation, diversification, comparable access and new gas industry markets, least-cost planning, open access power transmission, rate-case issues, and accounting developments.

Environmental matters, as a whole, have been a growing concern, noted Paul R. Bjorn, chairman of the Price Waterhouse Public Utilities Industry Services Group.

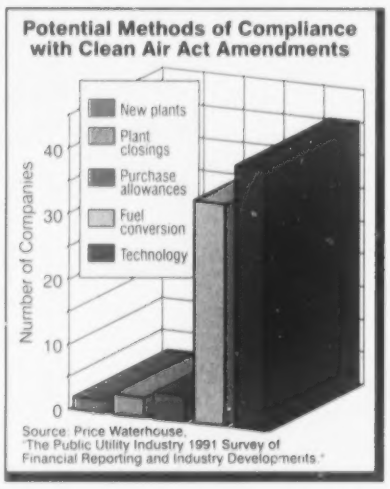
"Of the 100 companies we surveyed, 96 addressed environmental matters such as clean air, ground and water contamination, safe drinking water, waste disposal and research and remediation," Bjorn said.

The 110-page report, released in December 1991, includes some 1991 figures. It was based largely on assessment of 1990 annual reports: 70 electric and combination utilities, 25 gas and five water companies.

Competition

In the report, utilities said it is becoming increasingly difficult to be the supplier of choice. Traditional investor-owned electric utilities are being challenged by:

- IPPs [independent power producers] and cogenerators for energy sales to large industrial and commercial customers.
- Municipalities and cooperatives in areas where customers are allowed to choose their energy provider.
- Other utilities for bulk power sales.
- Other regions of the nation for economic development.



Sources of, and responses to, utility industry competition are shown, on page one in this issue of *EL&P*. "The underlying strategy most often noted in addressing competition was to make the customer the company's number one priority," said the report.

The major factors driving utilities toward conservation and demand-side management programs were listed as escalating costs and growth in demand. Regulatory concerns ranked the lowest among listed drivers.

Technology and fuel conversion were the two most common compliance methods for abiding by the Clean Air Act Amendments of 1990, while purchase of allowances, plant closing and new plants were way down the scale. (See graphics, this page.)

Resource planning

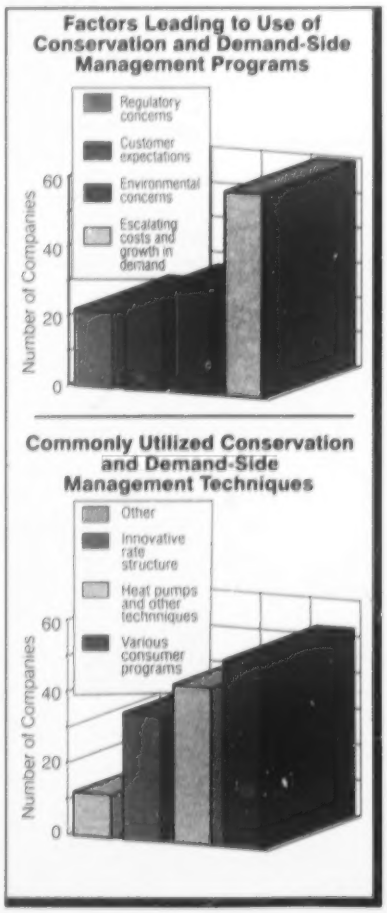
Solutions to resource planning, in descending order, were:

- Load and demand-side management;
- Inter-regional bulk power sales, purchases of other power;
- Combustion-turbine generators;
- Non-utility construction of cogeneration facilities;
- Repowering existing units, life extensions;
- Fuel diversification;
- Competitive bidding;
- Long-term, flexible power contracts.

Reports of sale and leaseback transactions doubled to 16 in a year.

Diversification activities

Among the 70 electric and combination utilities, more than 50 were involved in energy-related diversification in 1990, more than 40 were involved in "services," and more than 30 were involved in real estate. Among energy related activities, cogeneration topped the list, more than 35 companies; in descending order were exploration and production, transmission and storage, coal mining, and gas brokering.



SO_2 emission allowances become the new paradigm in utility planning

TAMPA, FL – Even though sulfur-dioxide emission allowances will fundamentally change the way utilities do business in the 1990s and beyond, there's still only a dim understanding of how the market will work.

The allowance market, created by the Clean Air Act Amendments of 1990, is the newest and most innovative tool for utilities to cut in half and cap SO_2 emissions by the year 2000. Allowances – basically a federal license to emit a ton of SO_2 during a year – are required for many generating plants under the new guidelines. Others may volunteer to be included to gain credits.

Several speakers at the recent PowerGen Exhibition and Conference here offered some insights.

"There's a new paradigm in environmental control – the market approach compared to the old command-and-control approach," said Philip O'Connor, chairman of the Chicago consulting firm, Palmer Bellevue Corp., and head of the subcommittee that is advising the Environmental Protection Agency (EPA) on the establishment of an allowance trading and tracking system. Allowance trading is the key to the market approach.

"The difficulty," said O'Connor, "is that no one can really know now what allowances will be worth – yet compliance options are highly dependent on estimating what the value might be."

Acid-rain compliance plans must be filed by early 1993, but commitments have to be made before that to take advantage, for example, of the bonus allowances to be awarded to utilities who opt for scrubbers for plants burning high-sulfur coal.

Mark Garrison, United Engineers & Constructors, said the Phase 1, 1995 deadline affects 261 generating units.

Compliance Strategies
Clean Air Act Amendments of '90

He estimated Phase 2, starting in the year 2000, likely will include 600-700 units, possibly as many as 1000 units (all units 25 MW and over). Some estimates say 1500, or more, units might be involved in Phase 2.

There is a total of 5.4-million SO_2 allowances available in Phase 1 and 8.9 million in Phase 2, primarily based on what units emitted during a 1985-87 baseline.

These allowances can be traded and sold through market mechanisms that have not been fully defined yet. Utilities can reduce emissions from affected units below the allowance level and sell excess allowances, or they can buy allowances and use them at affected units to emit above the allowed level.

Chicago Board of Trade hopes to offer SO_2 emissions allowances as a cash and futures commodity on its exchange, as previously reported. The New York Mercantile Exchange also wants to trade

The allowance 'crop'

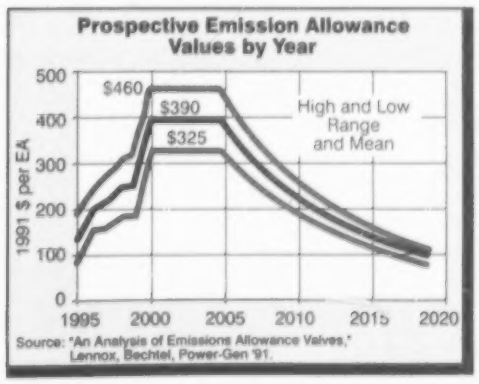
Richard Sandor, a director on the Chicago Board of Trade, said the commodity and futures exchange plans to trade SO_2 allowances in 25-ton lots, approximately equal in value with 100 oz. of gold.

He noted that the value of the SO_2 "crop" is worth about 75 percent of the U.S. wheat crop, a good reason for commodity traders to get involved. Some estimates value the market at $40-160 billion. Trading has value for utilities, Sandor said, since "speculators provide a buffer stock of the commodity in market cycles."

The cash, "spot and forward," market will be organized in the second half of 1992, and the "futures" market will start in 1993, said Sandor, who is also an executive managing director at Kidder, Peabody and Co.

"This is a great opportunity to take all our financial engineering and apply it to social problems," Sandor said, adding that the market will put a price on "environmental cleanup."

Allowances are still seeking a price, said Palmer Bellevue's O'Connor, adding that there have been no known commercial transactions so far. Offers to sell have been made, however, including Long Island Lighting Co., see sidebar.



First application

O'Connor calls allowance trading the first big application of least-cost planning or integrated resource planning in the utility industry that does not rely on government dictating costs. It's also the first time that "external" environmental costs have been directly "internalized," he added.

Mark Perlis, of the Washington, DC-based law firm of Dickstein, Shapiro & Morin, noted that the trading guidelines remain general as EPA seems to be "leaving it pretty much to the market."

Perlis reasoned that the risk-averse, regulated utility industry is "simply not rushing to place a value on allowances." With the prospect of a disallowance for a "wrong" move, "utilities are very skiddish on how compliance will be handled by electricity rate regulators.

Allowance value

Frank Lennox, manager of market analysis and strategic planning for Bechtel Power Corp., Gaithersburg, MD, estimated allowance values based on the cost of SO_2-emission control.

"How hard can it be to set an allowance price?" Lennox asked. "It has to be related to the cost of compliance."

Even though the market's quiet now, Lennox said he expects about 400,000 allowances to be sold in Phase 1. As many as 750,000 could be economically justified, he argued.

Lennox calculated the "book value" for allowances over time by analyzing the physical features and fuels burned in the major affected units (see graphic). The value will start out low, at $80 to $180 per ton (in 1991 dollars), then rise through the late 1990s.

Price is initially low, Lennox explained, because many affected units can meet the 1995 Phase 1 emission limit – 2.5 lb per million Btu – through low-cost emission-reduction steps such as switching to low-sulfur coal. Forty-five of the targeted units already comply with Phase 1, creating a potential pool of 280,000 allowances for sale.

Phase 2

"Phase 2," said Lennox, "is a different market." The tougher Phase 2 emission limit of 1.2 lb per million Btu will cause allowance values to climb after 1995 and reach a maximum value of from $325 to $460 by the year 2000. This is based, in part, on the increased need for scrubbers in Phase 2 at a capital cost of from $140 per kW to $260 per kW. Overscrubbing affected units creates most of the allowances for sale. At the peak of allowance trading in Phase 2, the "economically profitable" level will be from 2.6-million to 3-million allowance sales, said Lennox.

Allowances Offered at EPA Auctions and Sales

Year of Purchase	Spot Sale	Advance Sale[1]	Spot Auction	Advance Auction[1]
1993	--	25,000	[2]50,000	100,000
1994	--	25,000	[2]50,000	100,000
1995	--	25,000	50,000	100,000
1996	--	25,000	150,000	100,000
1997	--	25,000	150,000	100,000
1998	--	25,000	150,000	100,000
1999	--	25,000	150,000	100,000
2000 and after	25,000	25,000	100,000	100,000

[1] Not useable until 7 years after purchase.
[2] Not useable until 1995.

Source: EPA

Allowance value should begin to fall after the year 2005 as retirement of old, emitting units and replacement by new, clean units create unused allowances and a buyer's market.

Lennox's projections are significantly lower than the $300-600 Phase 1 and $400-1200 Phase 2 estimates recently cited by the Electric Power Research Institute.

Acknowledging the planning risks, Lennox said, "I wouldn't bet my son's college money on any allowance price projection."

Flexibility, uncertainty

The EPA's Rachel Hopp told PowerGen, "We [at EPA] know how to do command-and-control. The new system is a completely different approach."

Hopp, the EPA section chief in charge of implementing many of the new requirements, noted that utilities must file their permit applications by Feb. 15, 1993. She warned, "Don't wait until February 15 to make your first contact with EPA." Hopp suggested that utilities file compliance plans that contain options to deal with uncertainty on issues such as allowance values.

"We're hell-bent on building flexibility into this program," said Hopp.

John Henry, president of Washington, DC-based Clean Air Capital Markets, noted that utilities started their compliance plans a year or more ago. The letter of intent for scrubber installation as a compliance option is due March 1, he said.

EL&P's Robert Smock and Mark T. Hoske contributed to this article.

LILCO continues talks about selling 50,000

HICKSVILLE, NY – "We have elected not to select any final proposals at this time," said Suzanne M. Halpin at Long Island Lighting Co. about the 50,000 SO_2 emissions allowances (1995-99) it put on the market spring 1991.

Halpin said LILCo was still "continuing discussions with bidders" at year-end. She declined to say if price was the reason for missing a previously named announcement deadline (*EL&P*, 9/91, p.3). Halpin also said LILCo declines to name any other date for a decision. More than 10 bidders were said to have expressed interest, but that could not be confirmed.

LILCO had sought bids to test the market for allowances. The utility has the credits because state regulators required a switch to lower-sulfur oil at two generating plants after the baseline measurement period of 1985-87.

Count allowances as inventory, FERC says

WASHINGTON – The Federal Energy Regulatory Commission proposed accounting rules for SO_2-allowance trading, suggesting that utilities count credits as inventory, rather than utility plant, fuel, or in other categories.

The Dec. 2, 1991, proposed changes would require new accounting forms and changes in FERC reporting forms to record acquisition, holding and disposition of allowances.

However, "The proposed rule is not intended to prescribe the ratemaking treatment for allowances," noted the FERC release.

HENRY STEIN, Senior Editor-Power Production

Largest CFB in world going up and keeping ahead of schedule

SAN DIEGO—Point Aconi Unit 1, at 165 MW, will be the largest circulating fluidized-bed boiler (CFBB) in the world when it is finished in the spring of 1993, according to Pyropower Corp., the CFB boiler supplier.

Adjacent to the Prince Coal Mine in the Cape Breton area, the CFBB will be operated by and for the Nova Scotia Power Corp. (NSPC).

More than half done

Construction passed the 50-percent mark at the end of November 1991, with the combustion chamber and boiler backpass pressure components erected in December and final welding about 75-percent complete.

Boiler hydrostatic testing was a month ahead of schedule in December and was projected to be complete by March of this year. Boiler refractory and insulation work was to begin in the first quarter of '92, with plant commissioning to start in the fall.

Why CFBB?

NSPC chose the CFBB after a 10-year study of boiler alternatives. CFB technology was picked for its inherently low emissions of nitrogen oxides, in-situ control of sulfur dioxide emissions using limestone, and fuel flexibility, including the ability to burn relatively high-ash coal without slagging. Guaranteed SO_2 removal is 90 percent, and guaranteed NOx emission is 0.4 lb/MMBtu or less.

Prime contractor is Mitsui & Co. Ltd., while Sargent & Lundy Engineers is acting as project manager and architect/engineer.

Construction site of the Point Aconi circulating fluidized-bed boiler power plant shows coal processing building going up at left of photograph, stack in center, and boiler building on right. The 165-MW plant is scheduled to go online in the spring of '93.

Is Yucca Mt. site safe? Two views

LAS VEGAS—Storing high-level nuclear waste at Yucca Mountain, NV, still is a subject of controversy and extreme differences in opinion. In mid-December, a panel of five geologists split 3-to-2 on whether an earthquake might drive water from under the proposed repository up into it, causing the hot containment canisters to crack and leak radionuclides into the atmosphere.

The reports of the majority and minority panelists' opinions were released in mid-month by the Dept. of Energy.

In addition, a panel of the National Academy of Sciences is preparing its own report on possible flooding of the site. This report is scheduled to be ready early this year.

About the controversy

The panel of experts, who were not part of DOE, was formed by DOE to evaluate reports and proposals put forth by J. Szymanski, a geologist with DOE. He originally proposed the flooding theory.

The three panel members' 87-page majority report discounted Szymanski's ideas by saying he had not developed "an adequate theoretical basis for the mechanisms and consequences nor a body of evidence that is sufficiently supportive to require further investigation...." They further noted, "The concept of sudden large wall rock separations on faults [to allow the water to well up]...has not been established, and it is not supported by experience or other evidence."

Minority rebuttal

The two-member minority, on the other hand, stated in a 162-page rebuttal, "Nevertheless, since the individual mechanisms and physical processes evoked in Szymanski's integrated conceptual model...are all recognized to be possible physical phenomena and could be important (produce large effects) in some circumstances, it is clearly necessary to consider whether they are applicable...." They went on, "...the general processes...can conceivably occur."

Both sides called for onsite studies to try to resolve the questions brought up.

The majority members of the panel were Dr. Dennis W. Powers, geologist at the University of Texas. Dr. John W. Rudnick, rock mechanics expert at Northwestern University; and Dr. J. Leslie Smith, hydrologist at the University of British Columbia. Minority members were: Dr. Charles B. Archambeau, geophysicist at the University of Colorado, and Dr. Neville J. Price, geologist at University College, London.

in New Mexico

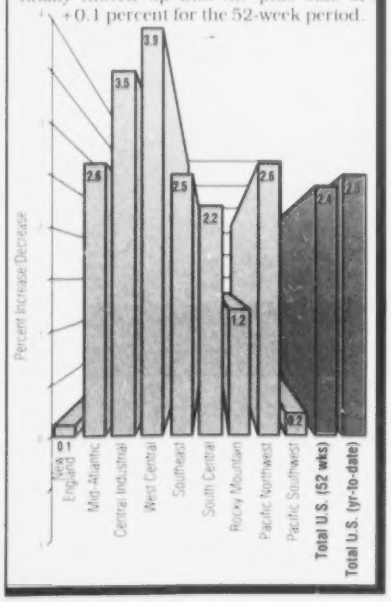
In a related development in late November, a federal district judge issued an injunction indefinitely barring opening of the Waste Isolation Pilot Plant in Carlsbad, NM. The decision on the plant, which is to be a permanent repository for nuclear wastes, was on a lawsuit by New Mexico, Texas, and four environmental groups against Energy Secretary James A. Watkins.

The suit said Watkins violated federal law by trying to open the pilot plant without congressional approval. Judge John G. Penn declared in his decision that the suit had a strong likelihood of success and so he prohibited DOE from placing any waste in the plant until the litigation was settled.

ELECTRIC OUTPUT

Growth Slowed More

Net electric output from the Mainland U.S. electric utility industry continued increasing at a slow rate for the 52 weeks ending Dec. 21, as reported by Edison Electric Institute. New England's rate finally moved up into the plus side of +0.1 percent for the 52-week period.



Combustion turbine runs on coal

WASHINGTON—The Department of Energy announced that, for the first time, a combustion turbine ran with direct coal firing on Oct. 30. The Allison Gas Turbine Div. of General Motors Corp. tested a 4-MW gas turbine fueled by a mixture of finely ground coal and water.

This was the first test in which a modern gas turbine ran long enough without damage to verify that coal firing could become an option for producing power.

Past attempts failed when tiny ash particles from the burning coal eroded turbine blades or plugged gas flow passages. The problem was so bad that some tests had to be stopped after only 15 min of run time. The Allison tests lasted for 4 hr, the planned duration, with no apparent ill effects on the gas turbine.

The test took place at the company's Indianapolis plant in August, but DOE held up making the announcement until it had completed its review of the test data. The data showed that complete and stable combustion occurred and the turbine performed as designed.

Not only did the test prove that gas turbines could be fueled by using the nation's abundant coal supplies, but also that the turbines produced less smog-forming NOx than current gas- and oil-fired units.

The Allison turbine used a new combustion system named the "rich, quench, lean," or RQL. The system is a a three-stage, high-pressure combustion process in which coal first burns at temperatures around 3000°F (1820°C) in a fuel-rich zone with a limited amount of air. The partial burning of coal does not allow enough time or oxygen for the nitrogen to combine with the air to form large quantities of NOx.

The fuel-rich gases then are doused with water in a quench zone, which "freezes" the low NOx content. Quenching lowers the temperature and solidifies coal ash so it can be removed before harming the turbine. Combustion is completed in a third, fuel-lean zone.

In the tests, the system limited NOx emissions to 25 ppm. When used with gas-fired units, it is estimated that RQL technology will burn with even lower NOx emission levels.

The fuel for the tests was subbituminous, low-sulfur coal. In the remaining three years of the DOE contract, Allison will focus on developing a dry, pulverized-coal feed system to replace the slurry-fuel system. The switch should lower costs. Other work will include tests of advanced techniques for removing sulfur pollutants and small flyash particles.

The company has begun to offer RQL-equipped combustion turbines for natural-gas-fired systems in California where NOx emission limits are among the most stringent in the nation. A coal-fueled version is expected to be ready for commercial sale in the late '90s.

DOE awards second and third MRS grants

WASHINGTON—The U.S. Department of Energy awarded two grants for almost $100,000 each to study the feasibility of siting an above-ground, Monitored Retrievable Storage (MRS) facility for temporary storage of commercial nuclear spent fuel. In late November, DOE awarded one to Grant County, ND, and another to the Chicksaw Indian Nation of Oklahoma on Dec. 30.

The money will be used by both parties to look at the nuclear waste management system and determine if they are interested in pursuing further feasibility studies for the MRS.

These were the second and third such grants for feasibility studies. The first, in mid-October, went to the Mescalero Apache Tribe of New Mexico. In commenting on this first award, John Bartlett, director of the Office of Civilian Radioactive Waste Management, said, "This award is an important first step forward for the program."

The MRS facility will receive, temporarily store, and stage spent nuclear fuel slated for ultimate disposal in a permanent geological repository.

The applications are only considered "expressions of interest" by DOE. None are construed as a commitment on the part of the applicants to actually host the facility.

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ELECTRIC LIGHT & POWER

EL&P

MARCH 1992
Volume 70, Number 3
A PENNWELL PUBLICATION

VOICE OF THE ELECTRIC UTILITY INDUSTRY

LATE NEWS

Senate may pass a revised omnibus energy bill by March. Debate and a flurry of amendments, halted by a recess, were expected to continue after Feb. 17.

Clean Air Act Amendments of 1990 may generate $50 billion in revenue related to pollution control and fuels, says an Environmental Protection Agency report.

Global carbon-dioxide emissions trading is the best way to solve climate-change concerns, says a United Nations study. It also recommends forming the global equivalent of the EPA.

Bush budget adds utility fees, increases key energy spending

Is new charge fair for DOE nuclear cleanup?

WASHINGTON—Highlights of President Bush's fiscal-year 1993 budget proposal include:

- Certain tax and accounting incentives, including cuts in capital gains rates.
- A 0.33-mil/kWh fee on nuclear generation as of October 1992 to pay for cleanup at three federal nuclear fuel enrichment plants.
- Increased funding and staff for implementing the Clean Air Act Amendments of 1990.
- A 24-percent increase for research on global climate change.
- Increases for the Department of Energy, including conservation, solar and renewable technologies, and environmental research.

The president's State of the Union Address also revealed a plan to place a 90-day moratorium on regulation seen as hindering business growth. As a result, the Environmental Protection Agency may be required to delay some clean-air regulations.

Senate bill: ease N-plant licensing

Bush repeated his call for enacting the National Energy Strategy. In related news, the Senate on Feb. 6 approved an amendment to the energy bill that would streamline nuclear plant licensing by combining the construction and operating license-approval process. The Senate hadn't acted on the full bill as of mid-February.

The budget's new nuclear fee would apply to any domestic nuclear generation that ever used DOE's enriched uranium as fuel. The fee, however, would be levied on current generation. Nuclear utilities suggest the fee doesn't account for utilities no longer buying fuel from DOE, or for non-U.S. utilities, which couldn't be charged. The estimated annual collection of $183 million would pay for cleanup of three federal enrichment sites.

DOE and EPA proposed spending for fiscal year '93 would increase compared to FY-'92. DOE was $19.4 billion, up from $19.04 billion, and EPA, $7 billion, up from $6.7 billion.

While DOE's energy supply research and development budget increases to $3.64 billion from $3.41 billion, coal R&D would drop from $300.9 million to $153.9 million. Clean coal funding is intact at $500 million for rounds four and five.

The total nuclear R&D budget would fall slightly. Nuclear fission funding fell. Fusion funding increased. Nuclear waste funding increased.

The budget again seeks to restructure power marketing administrations' debt payments, rejected by Congress last year and criticized by public power utilities. It would accelerate payments to the federal government by $398.7 million. Bonneville Power Administration's funding increase includes work on the third AC intertie. BPA said budget's debt repayment would be on a set mortgage amortization schedule, requiring faster repayment. BPA said the change would increase wholesale power rates by 11 percent and retail rates by 7 percent.

The budget also would cut Tennessee Valley Authority's federal funds (not used for utility operations) to $100.7 million, from an estimated $135 million.

In other budget items:

- DOE Secretary James Watkins plans to reorganize DOE national labs.
- The Department of Health and Human Services would cut by a third funding for Low Income Home Energy Assistance Program (LIHEAP). In addition, about 75 percent of the FY-'93 budget would be spent in FY-'92 to repay state and local money already spent.
- The Federal Energy Regulatory Commission and the Nuclear Regulatory Commissions both get increases, funded by utility fees.

Releases from federal departments and agencies and material from the Edison Electric Institute, American Public Power Association and National Coal Association contributed to this report.

Kansas utilities merge, $1B deal

TOPEKA, KS—Kansas Power & Light Co. received final regulatory approvals to acquire Kansas Gas and Electric and expects to complete the $1-billion deal by March 16.

Kansas Power & Light Co., which operates as KPL Gas Service, plans to operate KG&E as a subsidiary. The companies project a savings of $140 million within the first five years as a result of the merger.

KPL said no layoffs are planned. A voluntary retirement package will be offered to those 55 or older with 10 or more years of service. About 700 employees are eligible—just 100 from KG&E.

Offer ended takeover attempt

The KPL offer in 1990 ended what KG&E called an illegal and underpriced hostile takeover attempt by Kansas City Power & Light (*EL&P*, 12/90, p.1).

KG&E, based in Witchita, KS, has 250,000 electric customers and 1330 employees. KPL has more than 1 million gas customers and 306,000 electric customers and employs 4500.

Non-utility power records double-digit growth

Growth in non-utility generation continues, according to two recent reports.

Independent power producers (IPPs) were contributing 43.1 GW to U.S. electrical capacity at the beginning of this year, compared to 37.6 GW in January 1991, or an increase of about 14.6 percent, based on information in the RCG/Hagler Bailly Inc. "Profile of the Independent Power Market: 1992 Status and Trends."

For the rest of the '90s, RCG/Hagler Bailly estimated IPPs would add capacity of between 42 and 52 GW.

This continued growth and trends in similar statistics recently cited by Edison Electric Institute.

EEI said all non-utility generation (NUG) installed more generating capacity 1989-1990 than did all electric utilities. Utilities took half of NUGs' output, 116,528 GWh, an increase of 24 percent over 1989. This accounted for 4 percent of total U.S. electricity available for distribution, according to EEI's "Capacity and Generation of Non-Utility Sources of Energy."

From 1989 to 1990, all electric utilities added 4168.1 MW in installed capacity, growing to 735,051.4 MW, while NUGs added 4859.6 MW, growing to 45,126.7 MW, according to the December 1991 EEI report.

The average NUG project size was small at 12 MW, and the predominant fuel was increasingly natural gas, EEI noted. NUGs accounted for 6 percent of U.S. capacity. NUGs produced 8 percent of total U.S. generation in 1990, 232,781 GWh, representing an increase of 16 percent over 1989.

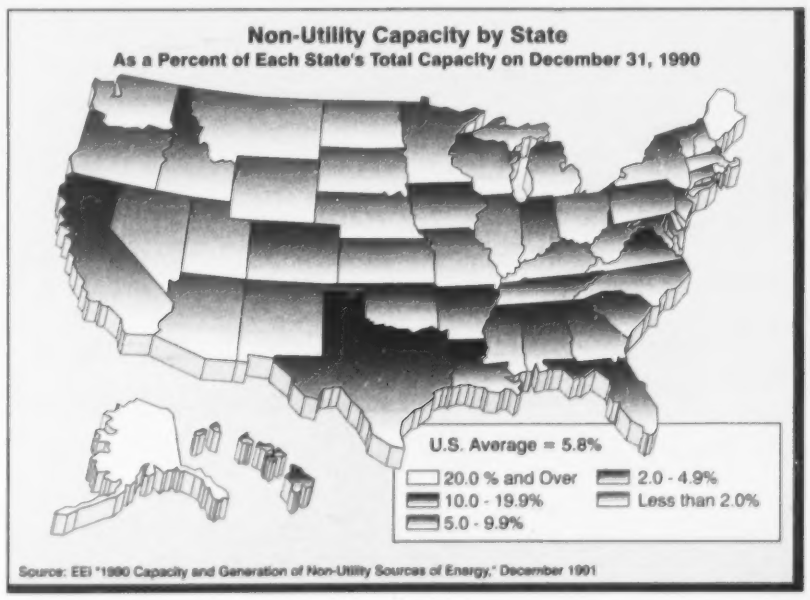
Just 9 percent was fully dispatchable; 67 percent had no dispatchability at the end of 1990, the EEI report said.

A report in April *EL&P* will project NUG growth to 2010.

Regional look at IPPs, NUGs

EEI said that in 1990, NUGs in Maine, Rhode Island, and Alaska provided 20 percent or more of total capacity there. More than 10 percent was provided by California, Hawaii, Texas, Ida-

Continued on page 4


Non-Utility Capacity by State
As a Percent of Each State's Total Capacity on December 31, 1990
U.S. Average = 5.8%
20.0 % and Over
10.0 - 19.9%
5.0 - 9.9%
2.0 - 4.9%
Less than 2.0%
Source: EEI "1990 Capacity and Generation of Non-Utility Sources of Energy," December 1991

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Toxics study recommends mercury emission controls

WASHINGTON—While federal regulators and the industry study toxic utility emissions, a Washington, DC, environmental group is calling for a mercury emission trading system.

If the U.S. Environmental Protection Agency were to adopt Center for Clean Air Policy (CCAP) recommendations, utilities might spend $500 million to $1.25 billion a year by 2010 to reduce mercury emissions 15 percent from present levels, according to the study. Edison Electric Institute rough estimate for mercury control costs is $5 billion a year.

CCAP also calls for "greatly expanded" research, especially on human exposure through the food chain. It also wants electric utilities "to report and make public estimates of their toxic emissions."

Clean Air Act Amendments of 1990 (CAAA) require the EPA to study the health and environmental effects of mercury and other toxic emissions. The first of several EPA mercury studies for the CAAA is due in 1993. Regulations may result if deemed appropriate.

Regional concentrations shown

The CCAP November '91 report, "Electric Utilities and Long-Range Transport of Mercury and Other Toxic Air Pollutants," was based on a three-year study of utility toxic emissions. It was not connected to the EPA effort. CCAP says a significant part of high mercury levels in aquatic food chains results from mercury in the air.

Mercury, said CCAP, poses "significant threats to human health, wildlife and the environmental integrity of the aquatic food chain" through high mercury concentrations in fish.

Mercury effects seem to be worst in waters in the Great Lakes region, particularly in Wisconsin and Michigan. Since contamination also occurs in pristine waters, with no nearby development, the atmosphere is thought to contribute man-made mercury. The 1972 Clean Water Act prohibits mercury releases into water.

Utilities are not the only source identified, but "with emissions projected to grow by 10-35 percent over the next two decades, utilities will account for over half of all the remaining national man-made mercury emissions."

The CCAP board is comprised of current and former governors, and others, including Richard Abdoo, chairman and chief executive officer, Wisconsin Electric Power Co., Ohio Public Utilities Commissioner Ashley Brown, and John Palmisano of the emission's trading firm AER*X.

Relative Cost-Effectiveness of Mercury Emission Reduction Options (In 1990 Dollars)

	Average Cost for 500 MW Plant ($ Millions/yr)	Cost ($ Millions per Ton of Mercury)	Maximum U.S. Reductions Achievable (% in 2010)
Fuel-Switch: Coal to Coal	8-23	30-292	<15
N. Appalachia to S. Appalachia	8-23	98-292	<10
Gulf Coast to Rocky Mountain	8-23	30-92	<5
N. Dakata to Powder River	8-23	88-262	1
Fuel-Switch: Coal to Gas	120-147	338-660	15-40
Coal Cleaning	12	176	<10
Baghouse retrofit	6-8	66-524	<10
Replace Hot-Side ESP	8	66	<5
Replace Cold-Side ESP	6-8	420-524	<5
Scrubber Retrofit	24-33	244-334	25-30
Emerging Technology Retrofit	11	60	90

Source: Center for Clean Air Policy, "Electric Utilities and Long-Range Transport of Mercury and Other Toxic Pollutants."

The study identifies options for control, estimates costs based on specific examples, and recommends the EPA regulate mercury emissions like the innovative and flexible sulfur-dioxide control plan, with a cap and trading system of allowances.

The report also lists and discusses other trace metals and their health effects, but says these effects might not be occuring now. These include arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and vanadium. Mercury, cadmium, and polycyclic aromatic hydrocarbons were listed as a "current concern." Nickel and vanadium were not of current concern. Effects of the others were called "uncertain."

Examples, costs, sources

The table on mercury emission options and cost of compliance assumes a plant with remaining life of 30 years, a 10,000 Btu/kWh heat rate and a 70 percent annual capacity factor.

Methods to reduce mercury include fuel switching (to low-mercury coal), energy efficiency, nuclear power and most renewable energy sources.

Coals from the Rocky Mountain states, the Illinois Basin and Southern Appalachia have relatively low average mercury concentrations.

As the table suggests, present emission-control technology is not as effective for mercury removal as for other pollutants. While CAAA compliance might significantly reduce mercury emissions, the report said, benefits "are not likely to be large."

Other major U.S. sources of atmospheric mercury, in addition to fossil power plants, are paint biocides and the burning of mercury batteries in waste-to-energy plants or incinerators. Recent decisions to eliminate mercury in paint, and reduce it in batteries, will cut those sources by 25 percent in 10 years, the report said. Other sources include mining, metal smelting and production of products containing mercury.

World-wide reduction

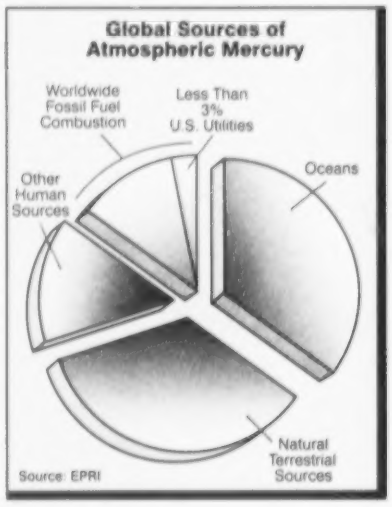
The report also suggests that the U.S. government participate in discussions about world-wide reduction of mercury emissions.

Estimates of man-made mercury emissions worldwide have been as high as 59 percent of total. The Electric Power Research Institute estimates global man-made emissions at 30-55 percent of the total. A small fraction of world-wide fossil fuel combustion is from U.S. utilities, EPRI says (see pie chart). EPRI has studies underway on mercury emission risk assessment.

Measurement proves difficult

Researchers concede that attributing a mercury to a source is difficult. Previous man-made emissions may be stored in water, soil, or sediments and show up again later as a "natural" source. Mercury measurement can be difficult because of small concentrations and danger of contamination. Partly because of the challenges of measurement, the estimated effectiveness of emission-reduction options has varied widely.

A conference on mercury as a global pollutant will be held May 31-June 4 in Monterey, CA. Information is available through EPRI, based in Palo Alto, CA.



Effective communication raises support for nuclear energy

WASHINGTON—Efforts to effectively inform the public about the value of nuclear energy has increased support for nuclear power, according to a U.S. Council for Energy Awareness (USCEA) collection of 1991 opinion polls.

However, unclear information about nuclear power may do more harm than good, suggested Ann Bisconti, USCEA vice president for research.

"Unquestionably, good information is very, very effective in increasing support for nuclear energy," Bisconti said in an interview.

"But confused messages that use jargon," she warned, "may confuse the message." Bisconti cautioned that people with scientific backgrounds may have difficulty in explaining things in a way the public can understand.

Building a positive public image, Bisconti said, is one of the keys to gaining the acceptance needed to build the next generation of plants.

And awareness is gaining, according to USCEA. In 1990, 49 percent of respondents said they were very, or somewhat, well informed, about nuclear energy issues. In 1991, those categories grew to 63 percent of responses.

Education helps positive image

Polls showed that more people support nuclear energy when they:

- Are told using a higher percentage of nuclear energy can cut air pollution and emissions of suspected greenhouse gases.
- Become aware that the Nuclear Regulatory Commission monitors plants daily. (In one poll, just 7 percent said they knew this.)
- Read USCEA material about nuclear plant safety.
- Tour a nuclear plant. Demographics suggest that people with inclinations to favor nuclear plants are more likely to visit one. However, USCEA said polling at visitor centers also suggests that a visit improves opinions, regardless of visitors' original views.
- Are reminded that radiation is beneficial and are shown examples that its use is under control.
- Learn that its use has reduced dependence on foreign oil.

In addition, when asked to choose between having waste-disposal facilities or giving up nuclear energy for electricity and medicine, people supported building waste-disposal facilities by 80 percent to 12 percent. Not surprisingly, people offered more support when it was called a "disposal facility" than when it was called a "dump."

USCEA television and print advertising had a positive impact.

"Overall favorability to nuclear energy increased significantly more among those who remembered seeing the ads than among those who did not remember," a USCEA statement said. Nearly half of those polled remember seeing USCEA ads in 1991. For the year, the ads had potential reach of 157-million Americans with an average 13 exposures.

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COMMENTARY

Conservation will not eliminate the need for new base load capacity

Grandiose claims from some utilities for estimated conservation savings to be achieved in future years are sending misleading signals.

At a recent meeting I attended, a manager with a major generating equipment supplier expressed concern that utilities would not need his company's product any more. Demand-side management and conservation programs, he pointed out, will cancel out most of the electrical demand growth in the 1990s—according to what he reads in the papers.

These claims are proliferating. Conservation and DSM, they trumpet, are eliminating the need for new generation and transmission facilities. I have to admit that we report our share of these claims. If utilities make them, we report them.

However, I think we also have an obligation to put them in a better perspective. One utility recently claimed that of the estimated demand growth of nearly 1400 MW in its service territory over the next decade, conservation would take care of nearly 800 MW and no new base load power would be needed. The emphasis in the announcement was on the conservation claim. The announcement also said, almost in passing, that the utility also planned 500 MW of new generation. It seems to me that what this utility is really saying is that it plans to meet 500 MW of near-term demand growth with new capacity. That new capacity will be short-leadtime, non-baseload power plants built by non-utility entities. The utility clearly hopes to reduce additional demand with conservation, but it has the option of meeting additional demand—at the last minute— with more new, short leadtime NUG capacity. The estimates for total demand and conservation are just that—estimates. The new capacity plan is real.

The large conservation estimates that precede new capacity announcements these days are unrealistic, in my opinion. They may be necessary in order to make new capacity plans politically acceptable, but I hope we all take them with a grain of salt. Is there any documented case where a utility, or anyone else, has actually achieved hundreds of megawatts of demand reduction through conservation, or any other demand-side program? I've seen documented cases of DSM programs aimed at peak shaving that have cut power demand, but the cuts are on the order of tens of megawatts.

This is not a diatribe against demand-side management. I think it's a good development. We sponsored a conference on distribution automation and demand side management in January and there's a feature article on the subject in this issue. The focus, as you can see, is on realistic, actual programs: real-time pricing, new communications technologies, new approaches to load shedding and peak shaving, and advanced metering.

Most states have adopted formal integrated resources planning programs—some call it least-cost planning or something else—that require utilities to include demand-side programs in their plans. Many states are also adopting rate incentives for utility involvement in conservation programs that, after all, are intended to reduce demand for utilities' basic product.

However, many DSM programs do not reduce demand for electricity. They shape demand via real-time pricing or direct-load control to take better advantage of power system economies. They make electricity a better bargain for the buyer—which paves the way for load growth.

Load management, a form of DSM aimed at peak demand reduction, has been actively pursued by utilities for at least 20 years. If DSM can eliminate new demand, why are we in a simple-cycle gas turbine buying boom right now? My answer to the equipment supplier manager who was worried about the future was to tell him to go talk to gas turbine suppliers. I'm sure that demand for gas turbines is less than it would have been without utility load management programs. How much less no one knows, but peak power growth has not been cancelled by DSM.

Likewise, base load power demand will not be cancelled by conservation and DSM in the 1990s. It will be reduced somewhat, but there will be extensive need for new boilers, steam turbines, transmission systems, and all the other equipment required to support new base load power. EPRI estimates that DSM will cut demand by 30% in the 1990s. Even that seems high to me, but if it's true it leaves 70% of the demand to be met by new capacity.

Robert W. Smock, Editorial Director

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Candidates' energy views follow political party lines

CONCORD, NH—Energy America, a coalition of New Hampshire environmental, consumer and sustainable energy organizations, released a survey of presidential candidates' energy policies on Feb. 10, prior to the state primary.

The survey showed that the group's energy agenda closely matches the energy views of Democratic candidates. It graded both Republicans "D," and all five Democrats "A."

Democratic candidates favored and Republican candidates opposed, the following issues, with the exceptions shown:

- Raising auto fuel economy standards.
- Shifting DOE funding to energy efficiency and renewables.
- A carbon tax. Brown, Clinton, Harkin, Kerry qualified their answers.
- Accelerating elimination of certain ozone-depleting chemicals. Bush supported.
- Development of solar/hydrogen fuel systems.
- Reducing U.S. energy use by 10 percent by the year 2010. Bush qualified his answer.
- Tripling contribution of renewables. Bush, no answer (NA).
- Full support of the Endangered Species Act.
- Re-evaluation of U.S. nuclear waste policy. Buchanan, NA.
- Rights of state for stricter-than-federal radiation laws. Buchanan, NA. Bush qualified his answer.
- Whistleblower protection. Buchanan, Bush, supported.
- U.S. leadership on international agreements on environment. Bush qualified his answer.

Republican candidates favored, and Democrats opposed, the following issues, with the exceptions shown:

- One-step nuclear plant licensing.
- Oil and gas development in Arctic Wildlife Refuge.
- Yucca Mountain and Carlsbad "nuclear waste sites." Buchanan, NA. Harkin supported.
- Shift to taxpayer liability for "low level" nuclear wastes. Kerry qualified. Buchanan, NA.
- Below regulatory concern policy for nuclear waste. Buchanan, NA.
- James Bay hydroelectric facility. Buchanan and Bush, NA. Clinton, Harkin, Kerry qualified their answers.

Energy Coalition's grading of the survey gave "half credit" for qualified answers and no credit for unanswered questions. Energy Efficiency Education Project, based in Washington, DC, distributed the release.

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Non-utility power...

ho, Louisiana, and Virginia (see map).

Leading IPP generators by state at the beginning of 1992 were New York with 8.6 GW, followed by New Jersey with 7.2 GW, Florida at 6.9, California with 4.5, and Massachusetts with 4.3 GW, said RCG/Hagler Bailly.

The single, most active state for IPP announced capacity under development at the beginning of '92 was Florida, for the second year running, with a total of 3.7 GW. After Florida, the highest numbers were for New Jersey, New York, and California, each with over 2.0 GW of capacity under development, the RCG/Hagler Bailly report said.

By area, the largest jumps in project announcements were in the South Atlantic region (9 GW), the Mid-Atlantic (7 GW), and the Pacific region (4 GW).

In another type of comparison, 224 IPP projects were brought online in 1990 to add a total new capacity of 6.4 GW, which was about 23 percent more capacity than the 5.2 GW that became operational in the 165 new projects completed in 1991, said RCG/Hagler Bailly.

How much, what kind

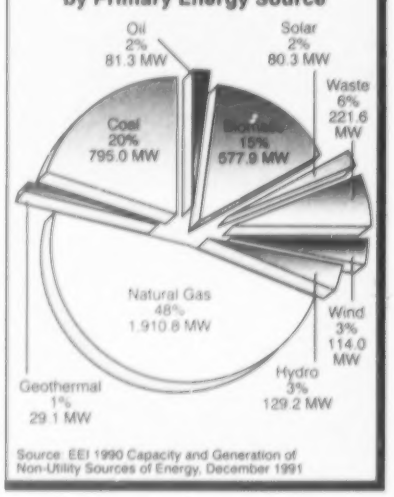
All newly announced IPP projects in '91, not those just expected to be completed in that year, had a capacity of 25.5 GW. At the start of '92, more than 66 GW were under construction or being planned, compared to 60 GW at the start of '91.

The fuel mix of IPP projects did not change as much 1991-92, said RCG/Hagler Bailly. Natural gas accounted for 45 percent of the generation capacity in '91 and for 47 percent in '92. Coal and waste coal were at 22 percent and 21 percent, respectively. Renewable energy and waste fuels composed 33 percent of '91's IPP capacity and 31 percent of '92's.

According to RCG/Hagler Bailly, the breakdown of active IPP projects by prime mover in January '92 were:

- Boiler/steam turbine—16.7 GW operating and 18.1 GW under development.
- Combined cycle—15.3 GW operating and 26.6 under development.

Non-Utility Capacity Placed in Operation During 1990 by Primary Energy Source



Source: EEI 1990 Capacity and Generation of Non-Utility Sources of Energy, December 1991

- Combustion turbine—5.2 active and 7.1 being developed.
- Reciprocating engine—0.7 GW operational and 0.3 GW under development.

According to EEI, non-utility generators:

- Were 73 percent cogenerators, and 27 percent small power producers, by type of producer at the end of 1990.
- Used mostly natural gas for new NUG capacity in 1990, at 48 percent (see chart), up from 41 percent of total NUG projects using the fuel. At 49 percent, the most common NUG prime mover is steam turbines; combustion turbines contributed 44 percent.
- Showed an annual capacity growth rate of 16 percent, 1987-90.
- Were small. A total of 72 percent of projects' capacity were less than 5 MW. Just 3 percent was 100 MW or more. Projects 100 MW and over accounted for 42 percent total capacity.
- Appeared to grow fastest in two industries over four years. Paper industry capacity there grew 44 percent; generation grew 40 percent. Chemical industry capacity grew 33 percent and generation grew 59 percent over the same period. The chemical industry leads paper in total amount of generation, 23 to 19 percent.